

Georgia Institute of Technology
Building Applications with ChatGPT Seminar Syllabus
Fall 2024, College of Computing
Delivery: 100% Web-Based
Meeting Frequency: Biweekly (Every other Tuesday)

Instructor Information

- **Course Instructor:** Benjamin Manning, Ph.D.
 - **Email:** bmanning@gatech.edu
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General Course Information

Description: This seminar provides a comprehensive understanding of building applications with ChatGPT. The course covers the fundamentals of ChatGPT, building customer support bots, creating content recommendation chatbots, and deploying virtual assistants. Students will engage in practical assignments to develop and deploy ChatGPT-powered applications.

Course Goals and Learning Outcomes:

- Natural Language Processing Fundamentals
- Create Effective Customer Support Bots
- Build Advanced Content Recommendation Systems
- Deploy and Optimize ChatGPT Applications

Course Materials:

- **Course Text:** None
- **Additional Materials/Resources:** All other required and recommended reading will be provided as PDFs on Canvas.

Course Website and Other Classroom Management Tools: All course materials and videos are located on Canvas.

Course Requirements, Assignments & Grading

Reminder: this is a seminar course and all of the assignment requirements will be provided for you, but assignments are not graded and are not mandatory. It's up to you to put in the work if you want to complete the assignments in the course. Otherwise, you are free to just follow along in the weekly discussions and participate in the biweekly roundtable discussions that are held virtually and are recorded for any of you that cannot make it. The only grade in this course comes from your independent final project which is outlined below.

Assignment Distribution and Grading Scale:

Final Project Overview

The final project for the *Building Applications with ChatGPT* seminar is an independent, comprehensive project that demonstrates your ability to apply the knowledge and skills gained throughout the course. The project should involve developing, deploying, and demonstrating a ChatGPT-powered application, such as a chatbot, virtual assistant, or any other relevant application that leverages natural language processing.

Requirements

- **Project Proposal:**
 - Submit a project proposal outlining the application you plan to build, including the problem it solves, target users, key features, and technical approach.
 - **Due Date:** Week 8
 - **Weight:** 10% of the final project grade
- **Project Development:**
 - Document the process of building your application, including the design, development, and testing phases.
 - Provide regular updates on your progress during the biweekly seminars.
 - **Due Date:** Ongoing; final documentation due on Week 12
 - **Weight:** 30% of the final project grade
- **Final Deliverable:**
 - Deploy the application in a functional state and make it accessible for evaluation.
 - Provide a written report summarizing the project, including challenges faced, solutions implemented, and potential future improvements.
 - **Due Date:** Week 14
 - **Weight:** 60% of the final project grade

Grading Scale:

- A 90-100%
- B 80-89%
- C 70-79%
- D 60-69%
- F 0-59%

Assignment Due Dates: All assignments are due at 11:59:00pm EST unless otherwise noted. All assignments are due per the Eastern Standard Time Zone (EST).

Course Schedule

Week 1: Course Introduction

- **Topics Covered:**
 - Course overview
 - Introduction to ChatGPT and its capabilities
 - Importance of natural language processing in application development
 - **Assignments:**
 - **Assignment 1: Initial Reflection**
 - Write a brief reflection on your current understanding of ChatGPT and your goals for the course.
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Week 2 (August 26, 2024): Introduction to ChatGPT and Natural Language Processing

- **Topics Covered:**
 - Fundamentals of ChatGPT and its architecture
 - Different natural language processing techniques
 - Applications and use cases of ChatGPT
 - **Assignments:**
 - **Assignment 2: Exploring ChatGPT**
 - Introduction to the GPT architecture
 - Setting up the development environment
 - Generating text using ChatGPT API
 - Experimenting with different prompt engineering techniques
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Week 3: Understanding NLP Techniques

- **Topics Covered:**
 - In-depth exploration of NLP techniques
 - Practical applications of NLP in different domains

- **Assignments:**
 - **Assignment 3: Analyzing NLP Applications**
 - Research and analyze a specific NLP application. Write a brief report discussing its implementation and impact.
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Week 4: Building Chat-Based Customer Support Applications

- **Topics Covered:**
 - Key components of chat-based customer support systems
 - Integrating ChatGPT into customer support applications
 - **Assignments:**
 - **Assignment 4: Designing a Chat-Based Customer Support Bot**
 - Understanding customer support requirements
 - Designing the conversational flow
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Week 5: Implementing Customer Support Bots

- **Topics Covered:**
 - Practical implementation of customer support bots
 - Handling user queries and providing accurate responses
 - **Assignments:**
 - **Assignment 5: Building the Customer Support Bot**
 - Implementing user authentication and session management
 - Training ChatGPT for customer support dialogues
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Week 6: Testing and Refining Customer Support Bots

- **Topics Covered:**
 - Testing the customer support bot
 - Refining the bot based on test results and feedback
 - **Assignments:**
 - **Assignment 6: Finalizing the Customer Support Bot**
 - Completing and refining the customer support bot based on testing results.
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Week 7: Creating Chatbot for Content Recommendations

- **Topics Covered:**

- Building chatbots for content recommendations
 - Collaborative filtering and content-based filtering
 - **Assignments:**
 - **Assignment 7: Developing a Content Recommendation Chatbot**
 - Understanding content recommendation techniques
 - Collecting and preprocessing data for recommendations
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Week 8: Implementing Content Recommendation Systems

- **Topics Covered:**
 - Training ChatGPT for content-based filtering
 - Creating personalized chatbot experiences
 - **Assignments:**
 - **Assignment 8: Building the Content Recommendation Chatbot**
 - Implementing personalized recommendations based on user preferences
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Week 9: Testing and Refining Content Recommendation Bots

- **Topics Covered:**
 - Testing the content recommendation chatbot
 - Refining the chatbot based on feedback
 - **Assignments:**
 - **Assignment 9: Finalizing the Content Recommendation Chatbot**
 - Completing and refining the content recommendation chatbot.
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Week 10: Deploying ChatGPT-Powered Virtual Assistant

- **Topics Covered:**
 - Deploying ChatGPT-powered virtual assistants
 - Setting up deployment infrastructure
 - **Assignments:**
 - **Assignment 10: Planning for Deployment**
 - Creating a deployment plan, including infrastructure setup and third-party integrations.
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Week 11: Implementing and Testing Virtual Assistants

- **Topics Covered:**

- Implementing conversational APIs
 - Testing the virtual assistant in a live environment
 - **Assignments:**
 - **Assignment 11: Deploying the Virtual Assistant**
 - Implementing and testing the virtual assistant.
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Week 12: Monitoring and Scaling ChatGPT Applications

- **Topics Covered:**
 - Best practices for monitoring and scaling production-grade chat applications
 - **Assignments:**
 - **Assignment 12: Scaling and Optimization**
 - Developing strategies for scaling and optimizing the deployed virtual assistant.
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Week 13 : Final Project Development

- **Topics Covered:**
 - Continued development of final projects
 - Troubleshooting and optimization strategies
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Week 14: Final Presentations and Course Wrap-Up

- **Topics Covered:**
 - Course review and key takeaways
 - **Assignments:**
 - **Final Project Submission**
 - Submitting the final version of the project
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Course Policies, Expectations & Guidelines

Communication Policy:

- You are responsible for knowing the information posted to this syllabus and anything emailed directly by the teaching team (including announcements via Canvas and Ed Discussions) within 24 hours of receipt.

Online Student Conduct and (N)etiquette:

- Read first, Write later.
- Avoid language that may come across as intense or offensive.
- Follow the language rules of the Internet.
- Consider the privacy of others.
- Keep attachments small.
- No inappropriate material.

University Use of Electronic Email:

- A university-assigned student e-mail account is the official university means of communication. Students are responsible for all information sent via their university e-mail account.

Plagiarism & Academic Integrity:

- Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards.

Accommodations for Students with Disabilities:

- If you require unique accommodation, contact the Office of Disability Services at 404-894-2563 or disabilityservices.gatech.edu as soon as possible to discuss your individual needs and obtain an accommodations letter.

Student-Faculty Expectations Agreement:

- Mutual respect, acknowledgment, and responsibility are essential. Respect for knowledge, hard work, and cordial interactions will help build the desired environment.

Subject to Change Statement:

- The syllabus and course schedule may be subject to change. Changes will be communicated via the Canvas announcement tool. Students must check Ed Discussions, email messages, and course announcements to stay current in their online courses.